TURCK

Industrial
Automation

Simatic Manager Step 7
Profibus/Profinet
Installation Guide

GUIDE

TABLE OF CONTENTS:

ABOUT THIS GUIDE

This manual is intended to supplement the Siemens Simatic Step 7 V5.5 SP3 documentation. This document will go through a brief introduction on creating a project in the Simatic Software and then will focus on installing, configuring, and troubleshooting Turck Profibus / Profinet devices.

REQUIRED PARTS

Hardware

- Siemens S7-315-2PN/DP
- Turck BL20-GW-DPV1
- Turck BL20-E-GW-EN
- Turck FGEN-XSG16-5001

Software

Simatic Manager Step 7 Software –- Current Version is V5.5 **Turck GSD(ML) Files**

EDS and GSD Files

Some network stations require "driver" files. These files are used in the master configuration software to tell the master what stations and parameters to use on the network. For DeviceNet the files have an EDS extension. For Profibus they are GSD. Please enter a part number to search for the EDS or GSD file.

⬇ Download all EDS Files (Zip)

⬇ Download all GSD Files (Zip)

You may also search for individual files through our general Part and ID number search.

Target Files

Target files are required for Turck Programmable Gateways. The only applicable gateway for Profibus is the BL67-PG-DP. **Turck Target Files**
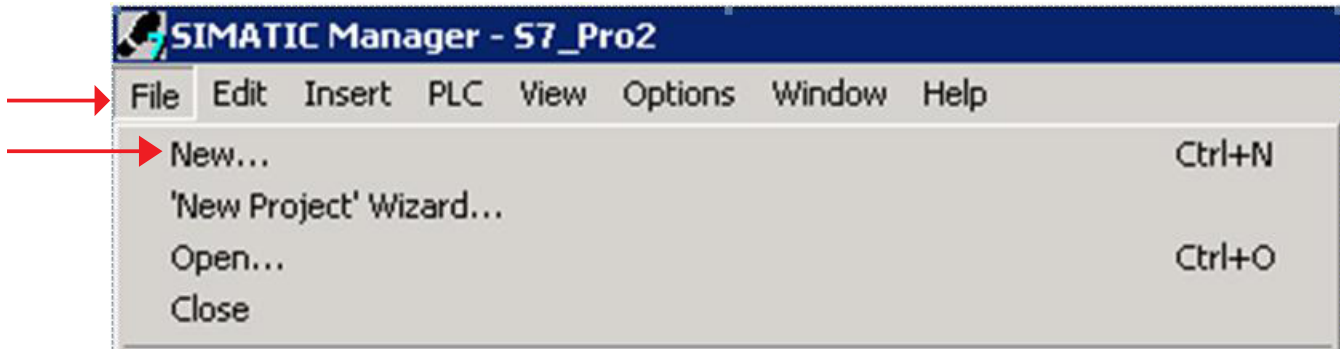
Simatic Step 7 Setup

It is assumed that there is working knowledge of Siemens Simatic Manager Step 7 V5.5. If not, please refer to the Siemens Simatic Programming with Step 7 Manual.
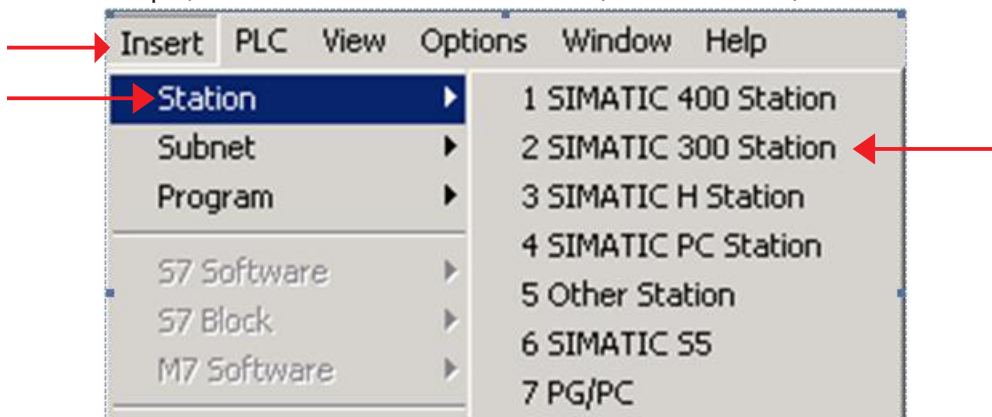
Create a New project in Simatic Manager using New or New Project Wizard or Open an existing project from

File -> New

Add a station to the Step 7 Project; click Insert -> Station -> Simatic 300 Station.

In the example, it will be the Simatic 300 Station (S7-315-2PN/DP)

The Profibus Configuration is done in the Hardware Configuration. To set the PG/PC interface click

Options -> Set PG/PC Interface.

To add the Profinet Controller, right click on the slot the Profinet card is in the chassis and in the pop up window click Add Module
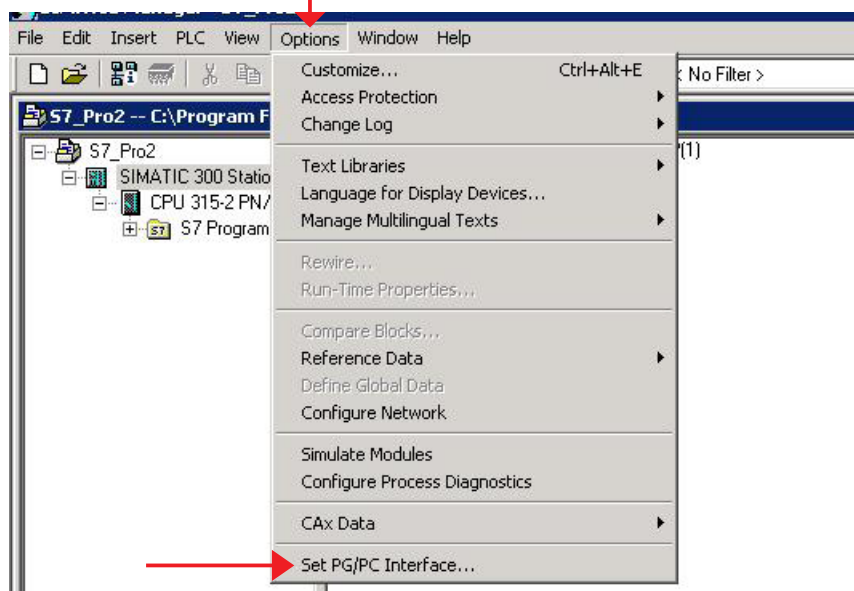
To set the communication protocol, use the PG/PC Interface dialog to select the connection between the S7 PLC and the PC. Most of the time TCP/IP (Auto) will be OK for communication between PLC and PC.
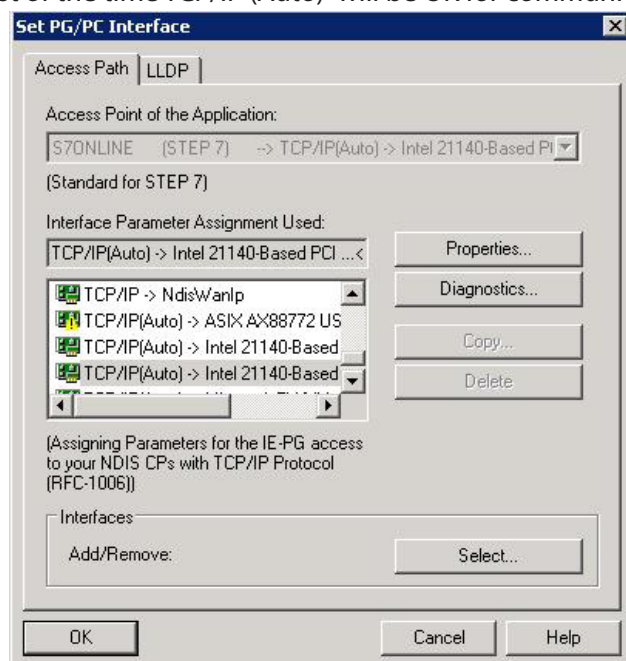
Setting the rotary dials for Profibus

There are two rotary dials on the BL20, BL67, BLCDP, FGDP. The left rotary dial is the high byte (0..F). The right rotary dial is the low byte (0..F). Available addresses for the Profibus Network are 1..125. Field bus address 0, 126, 127 are not available for addressing.
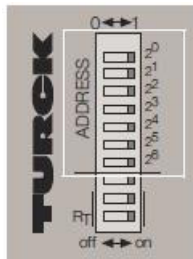

Figure 29: Hexadecimal rotary coding-switches for address setting on PROFIBUS-DP

⚠ Attention

A maximum of 125 addresses (001 to 125) can be allocated. Each address may be allocated only once in the entire bus structure.
The bus addresses 000, 126 and 127 must not be allocated.

Setting the dip switches for Profibus

The BL20-E-GW uses Dip Switches instead of the Rotary Dials. The Gateway's bus address results from the addition of valences (2^0 to 2^6) of the switched DIP-switches (position = 1)
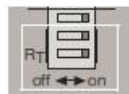

The BL20-E-GW-DP allows the Activation of the Resistor RT using the last to Dip Switches. Both Switches must be set to "On" to activate the Profibus Resistor

Setting the rotary dials for Profinet

Depending on the Turck Product being used there are either 2 or 3 rotary dials on the gateway. The dial is used to set the last Octet of the IP address (x.x.x.1-254). The first three octets will be set through the internet explorer or Pactware or the Turck IP Address tool.
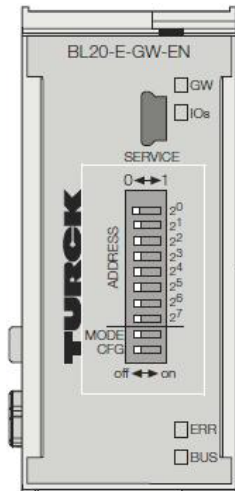
3 Rotary Dials

000: 192.168.1.254
1 - 254: static rotary
300: BootP
400: DHCP
500: PGM
600: PGM-DHCP
700: PROFINET
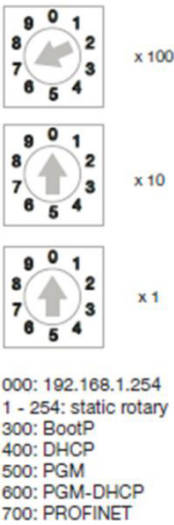
2 Rotary Dials

Field Transmission Rate	10/100 Mdps
Fieldbus addressing range	1...92
	0 (192. 168. 1.254)
	93 (BootP)
	94 (DHCP)
	95 (PGM)
	96...99 (Vendor Specific)
Fieldbus addressing	2 decimally coded rotary switches
Fieldbus connection technology	2 x M12, 4-pin, d-coded

Dip Switches

Address-switches 2⁰-2⁷ (Value)	CFF	MODE	Name
0	OFF	OFF	Restore
1-254	OFF	OFF	Address
1	OFF	ON	DHCP
2	OFF	ON	BOOTP
4	OFF	ON	PGM
8	OFF	ON	PGM-DHCP
16	OFF	-	-
32	OFF	ON	F_Reset

Setting the Ethernet address via the software

Web Configuration

To configure the IP Address using the Web Configuration, open Internet Explorer and Type in the IP address of the gateway you are connecting to.

Pactware

Pactware is a useful troubleshooting, simulating and monitoring tool for Turck gateways and I/O attached to the gateway. If Pactware is not installed, click to direct you to the Pactware I/O Assistant Software. Click on the Full to download Pactware to your computer.

With the Turck gateways connected, open the Pactware software. It will bring the dialog box up to select Hart Modem, Turck BL Service RS232, or Turck BL Service TCP-IP. Select Turck BL Service TCP-IP

Once selected, it will add the Ethernet driver to the Project Side in Pactware. Double Click on TCP/IP to open the BusAddress Management screen.

Click on the Eye in the Bus address Management screen to search for available gateways on the network. Once all the Turck devices on the network have been found, click on the Add Device/DTM to project (The battery with a plus sign). This will add the Device to the Project window. Also, it will add all I/O attached to the Gateway to the project window for simulating and monitoring.
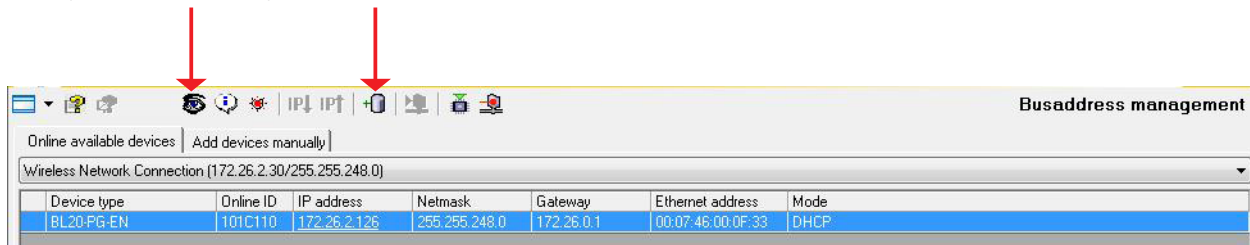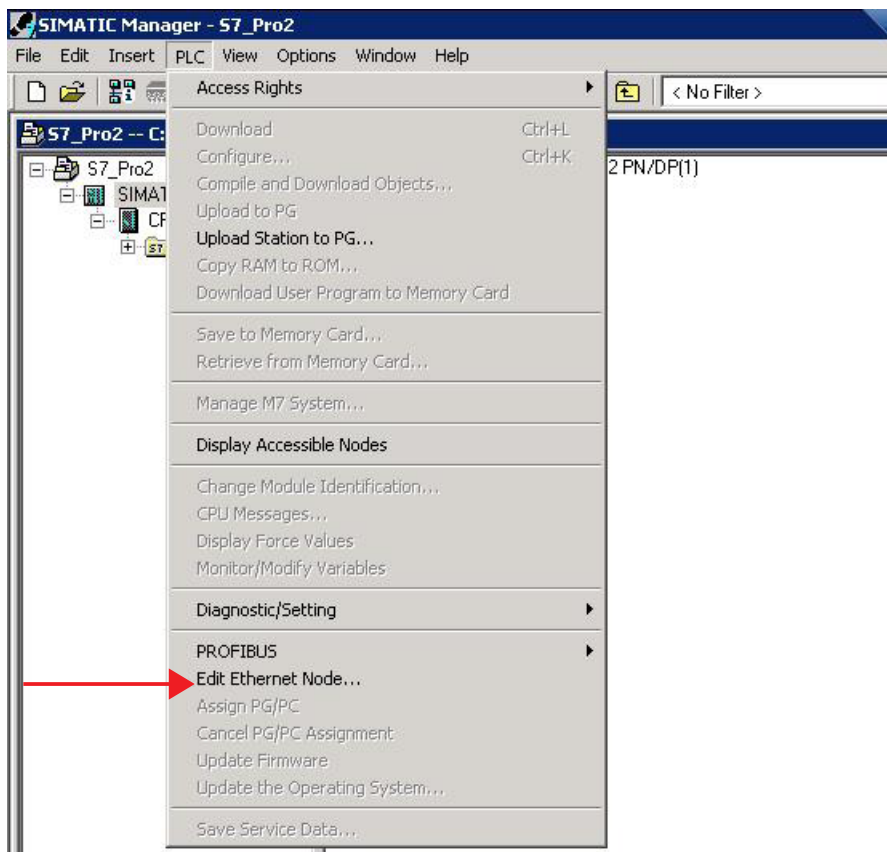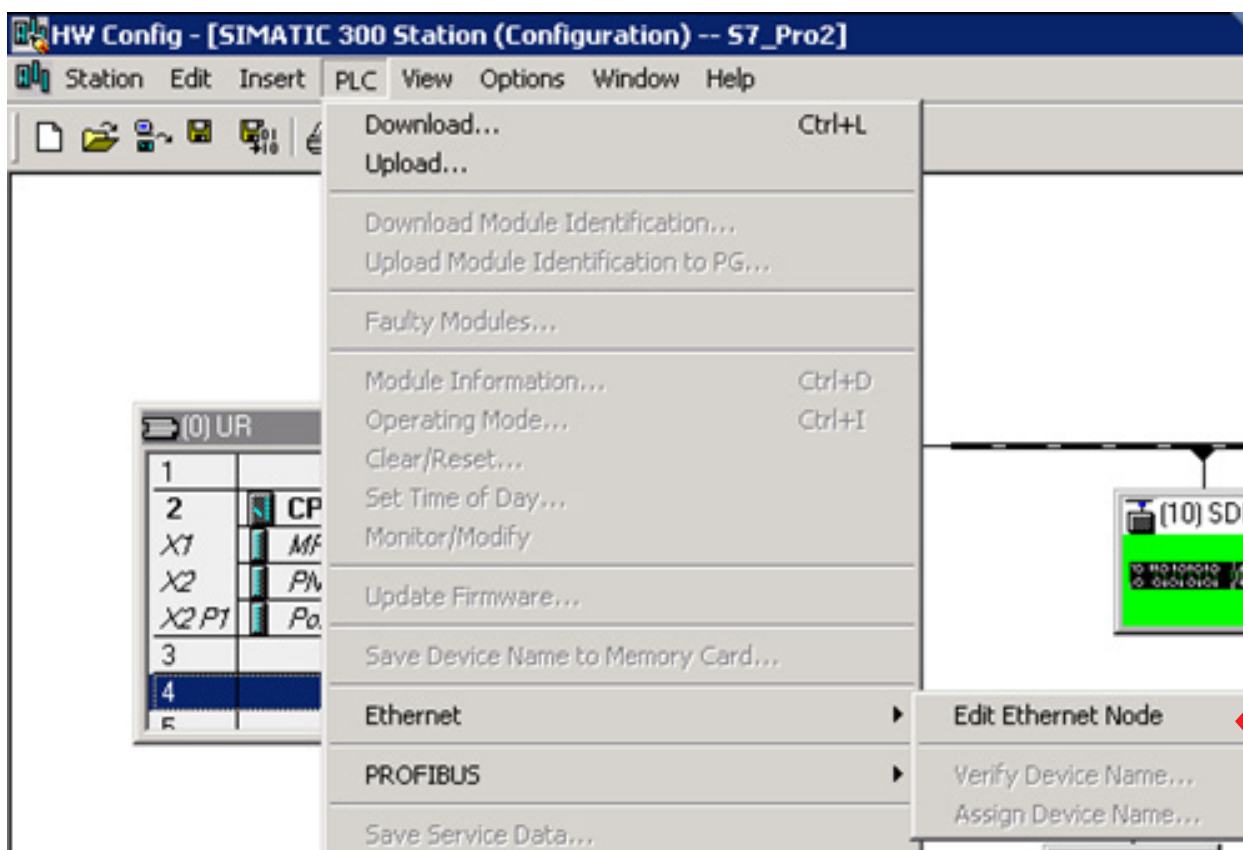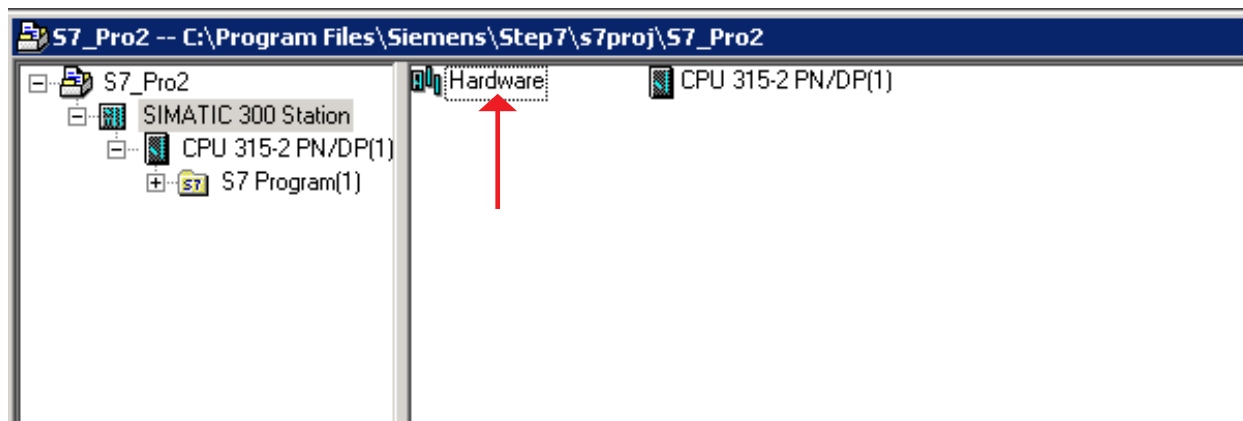

IP Addressing

In Turck products, the IP addressing can be set by either connecting to the Turck Gateway through Pactware, the IP address tool, or through Internet Explorer or modifying the first three octets of the IP Address. The last octet will be set by the rotary dials or dip switches.

To set the IP address in Step 7

1. Open either SIMATIC Manager or Hardware Configuration Manager

2. In SIMATIC Manager, Click PLC –> Edit Ethernet Node

3. In HW Config., Click PLC -> Ethernet Node -> Edit Ethernet Node

4. Click the Browse button. This will bring up a list of all available Profinet Nodes
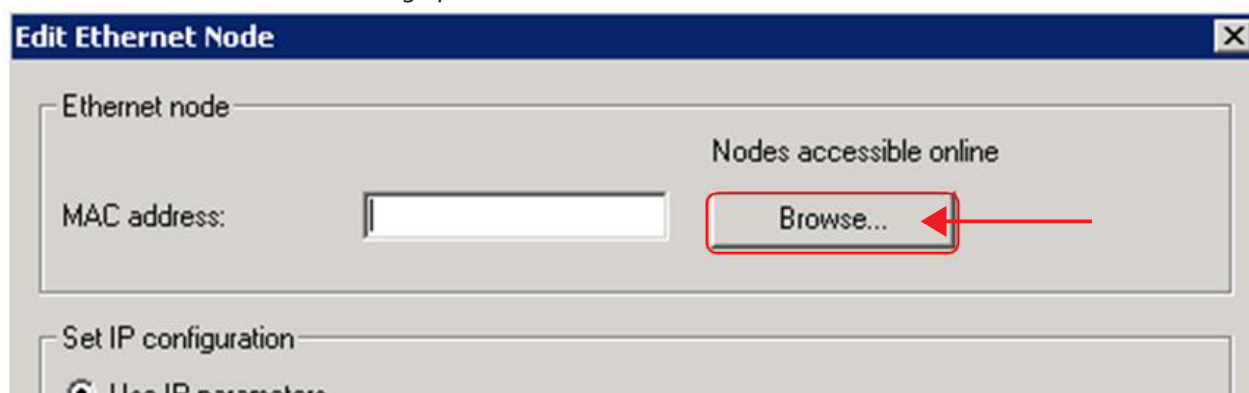
5. Select the Profinet node to modify.

6. Click OK
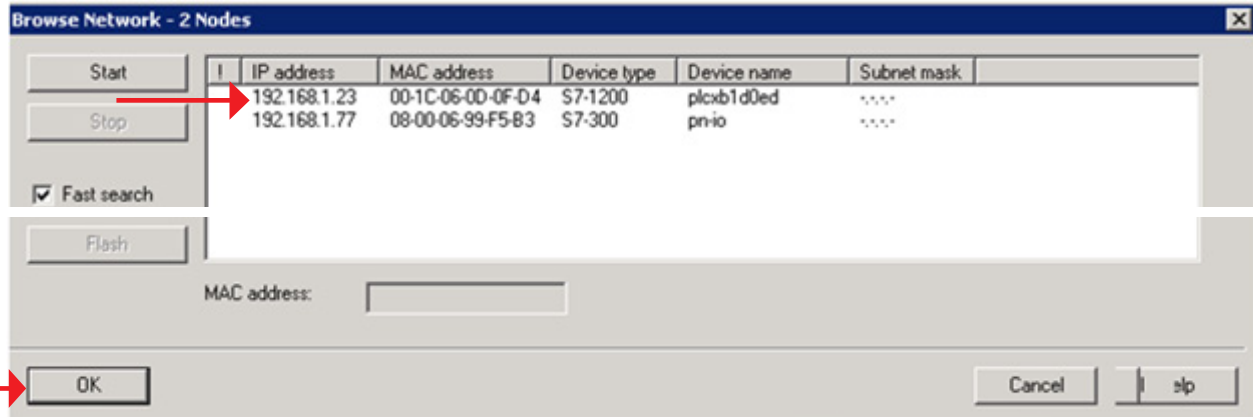
7. Once a node is selected, the IP address, Subnet, and Device Name will all be available to be modified. With Profinet, the Siemens PLC relies on the Device name to establish communications with the device on the network.

   Once the name and IP address has been assigned to the Device, click Close
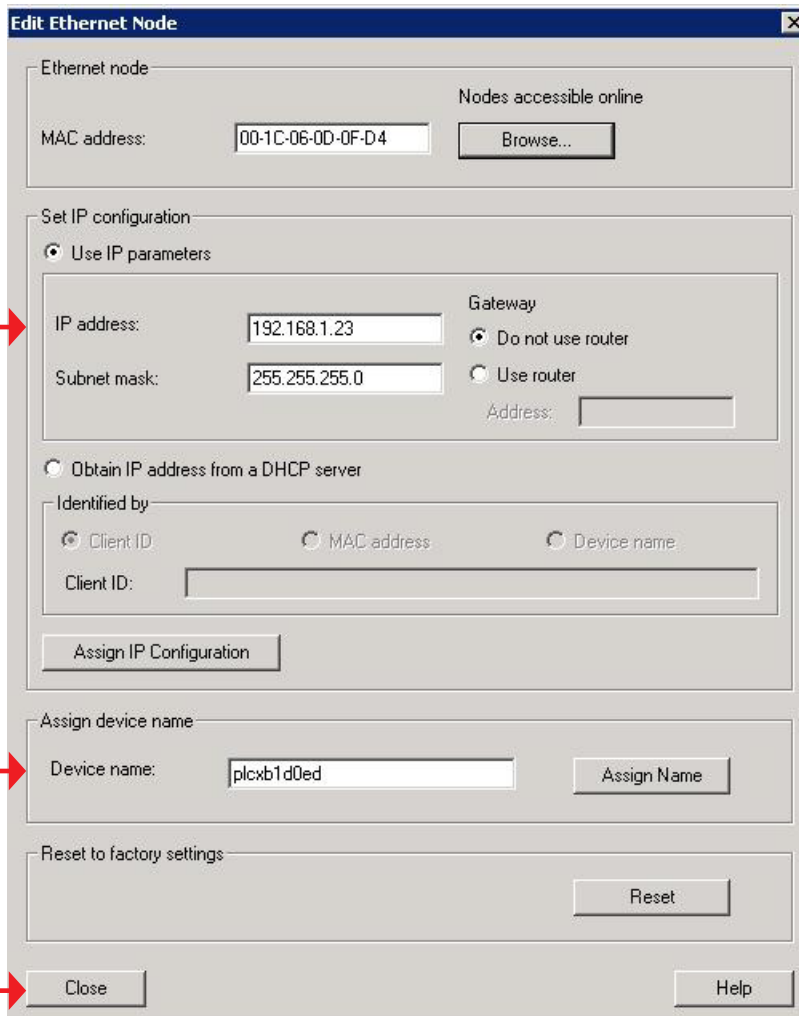
INSTALLING GSD / GSDML FILES IN THE HARDWARE CONFIGURATION

1. Open the Hardware Configuration Manager window and close all open projects.
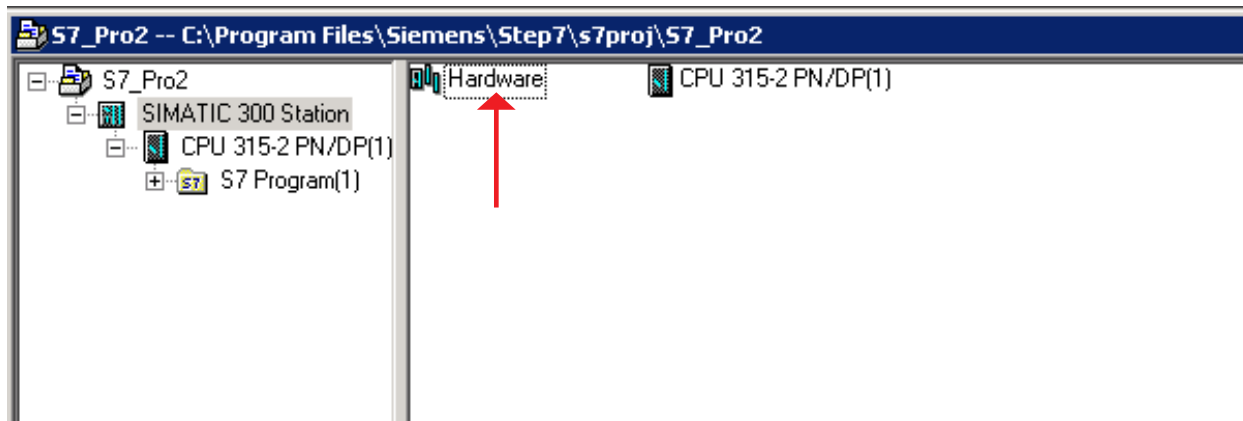
2. Click Options – Install GSD File…
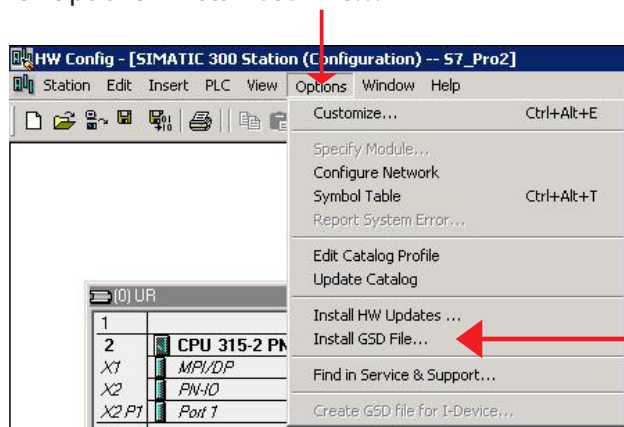
3. Browse to the folder where the GSD file is located.

4. Select file(s). Click "Install".
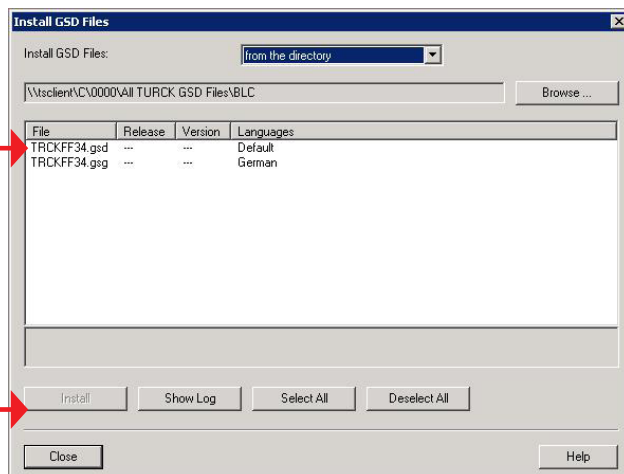
Note: All files with .GSD are the default GSD files in the English language. Other versions may include GSE (English), GSF (French), and GSG (German) languages.
All Profinet files are .XML files.

ADDING A DEVICE ONTO PROFIBUS / PROFINET NETWORK

Depending on the PLC defined in the configuration, there may be multiple Profinet or Profibus Nodes. In this example, only one Profibus and one Profinet node is used. It is assumed the PLC has been defined in the hard-ware configuration.

1. Open Hardware configuration from SIMATIC ManagerTo add a Profibus network, left double click on the MPI/DP address and change the interface type from MPI to Profibus,
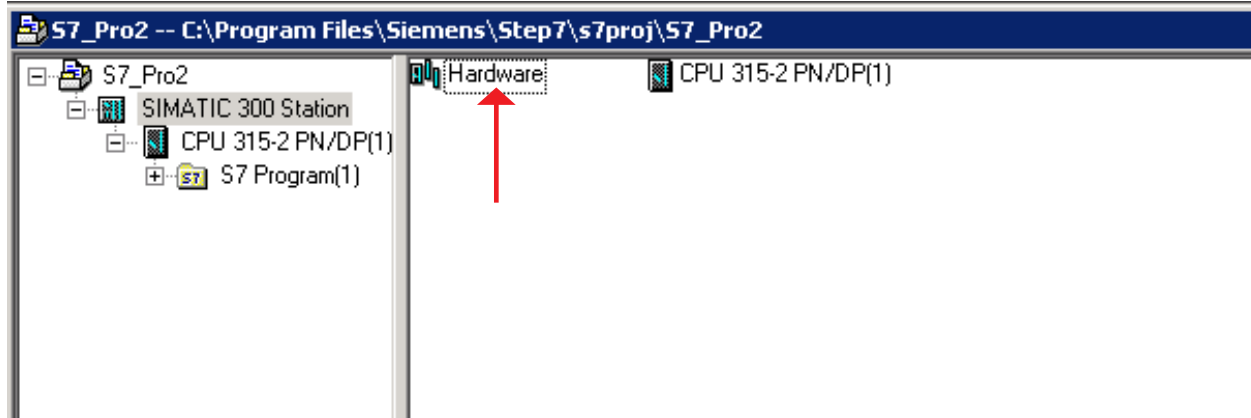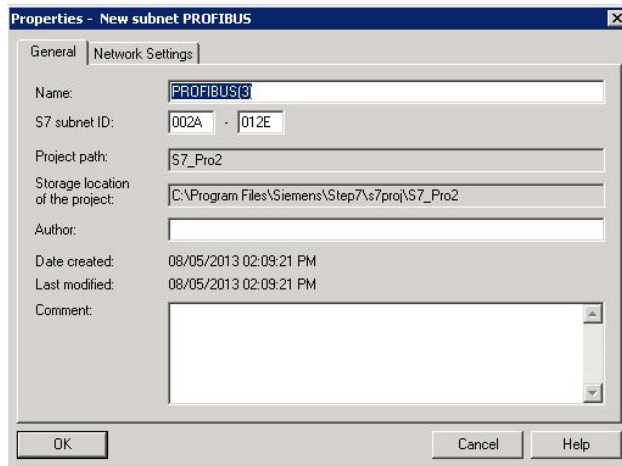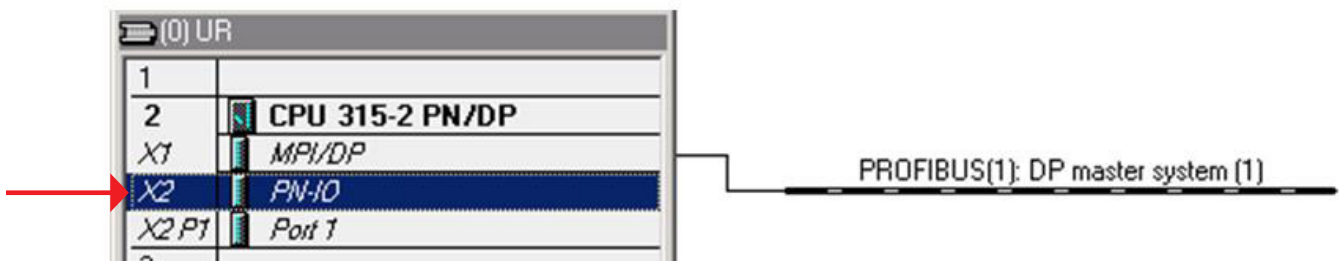

2. Click Properties…
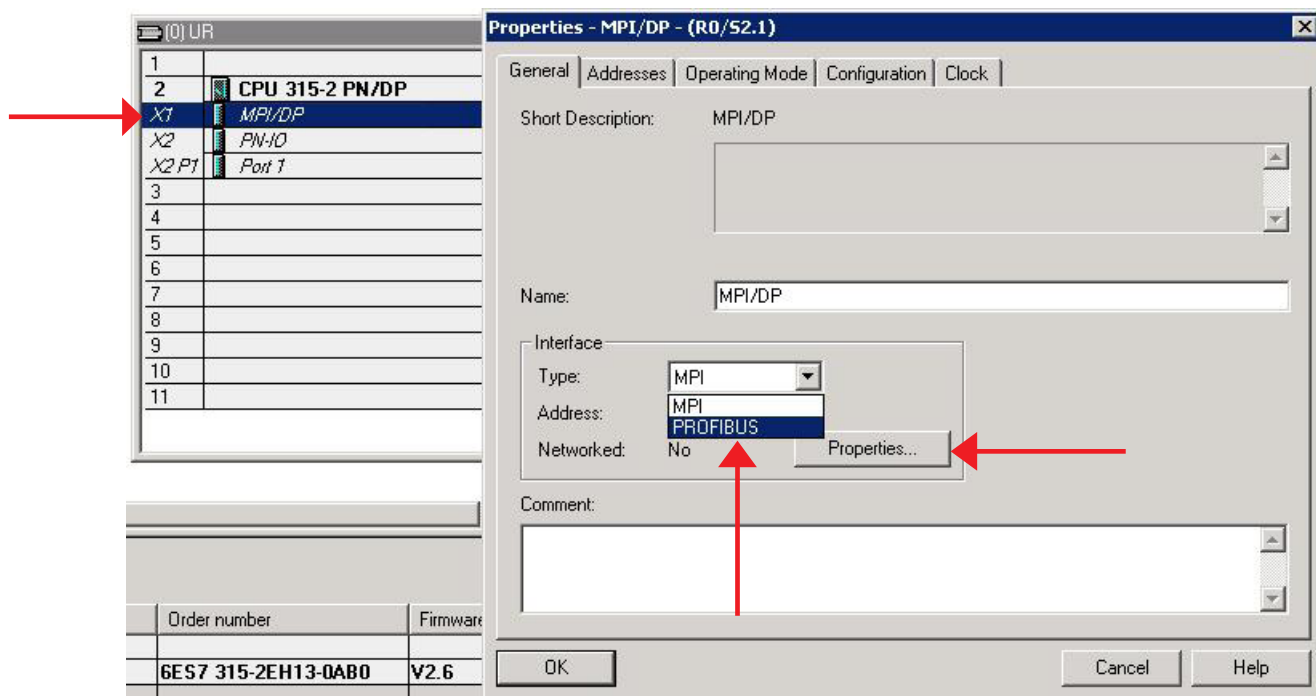
3. Add a New Subnet to the Profibus Network
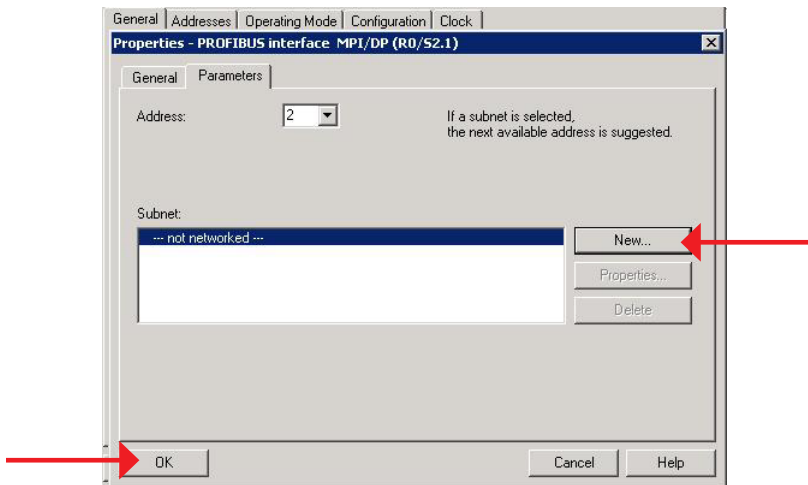
4. Click OK -> OK -> OK to exit out of Profibus interface parameters

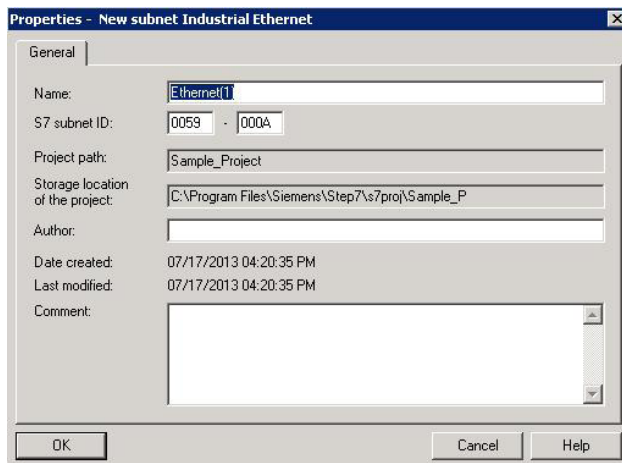5. For Profinet, double click on PN-IO in the Siemens PLC rack.

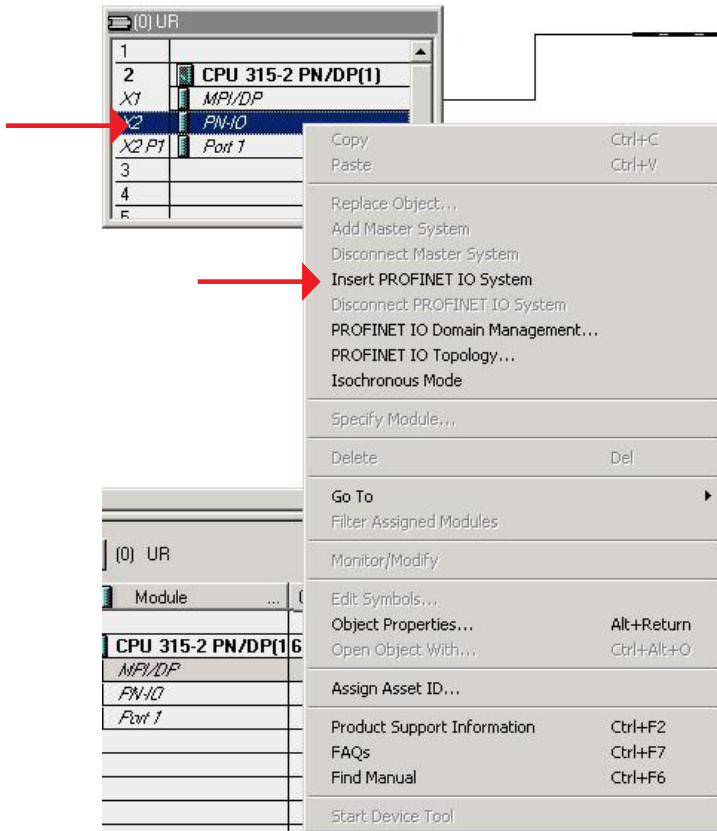6. On the General tab, Click on Properties button
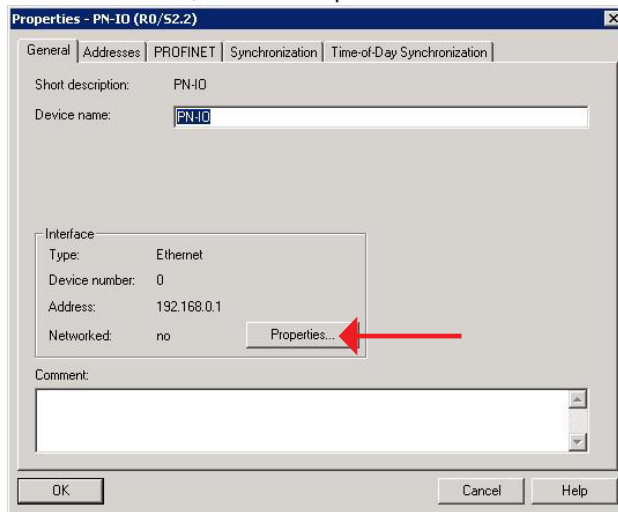
7. In the Properties window, click "New" to create a new Profinet network. On the Properties page, the IP address and subnet can be changed.
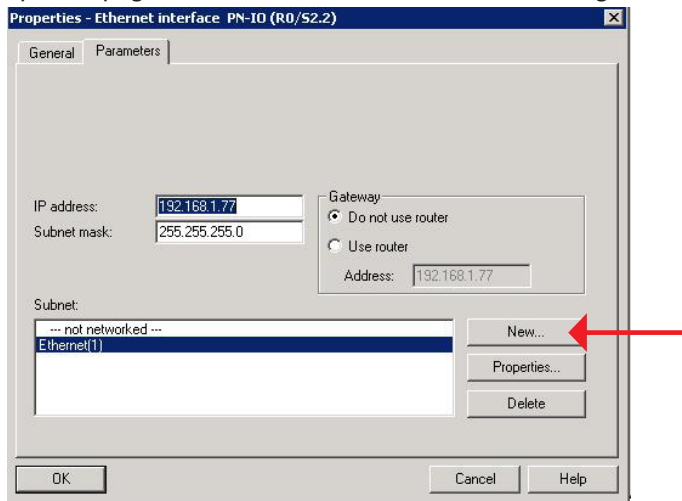

8. Click OK -> OK -> OK

9. Right mouse click on PN-IO. Click Insert Profinet IO System. This will create the Profinet network allowing devices to be added onto the configuration.


Adding a Profibus Device

To add a Profibus device, open the Hardware Configuration (HW Config). On the right side of the HW Config window the Profibus, Profinet, and Simatic 300/400 station GSD files are stored in a Library.

1. Open Hardware configuration from SIMATIC Manager
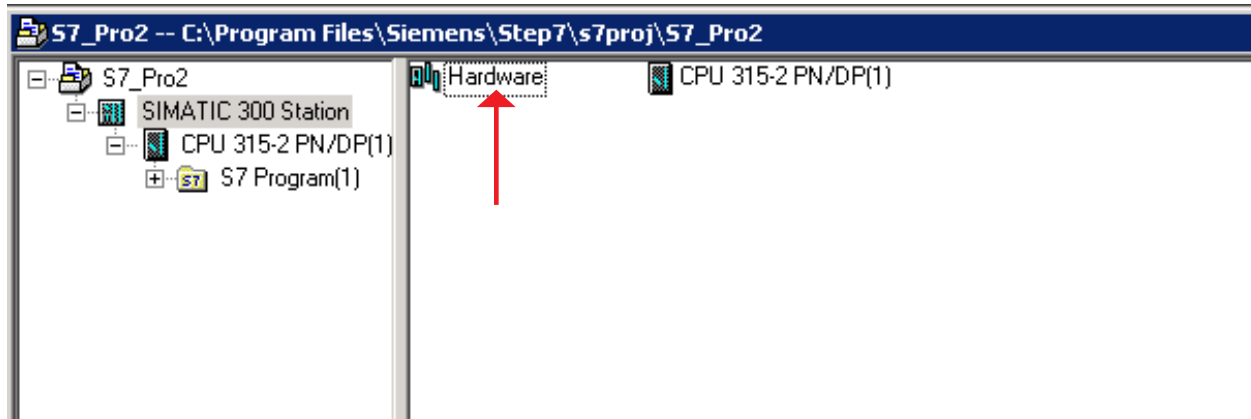
2. To add a Turck Profibus device, Select from the folder tree in the library - Profibus DP -> Additional Field Devices -> I/O -> Turck. This will show all Turck Profibus devices that have been added to the library.
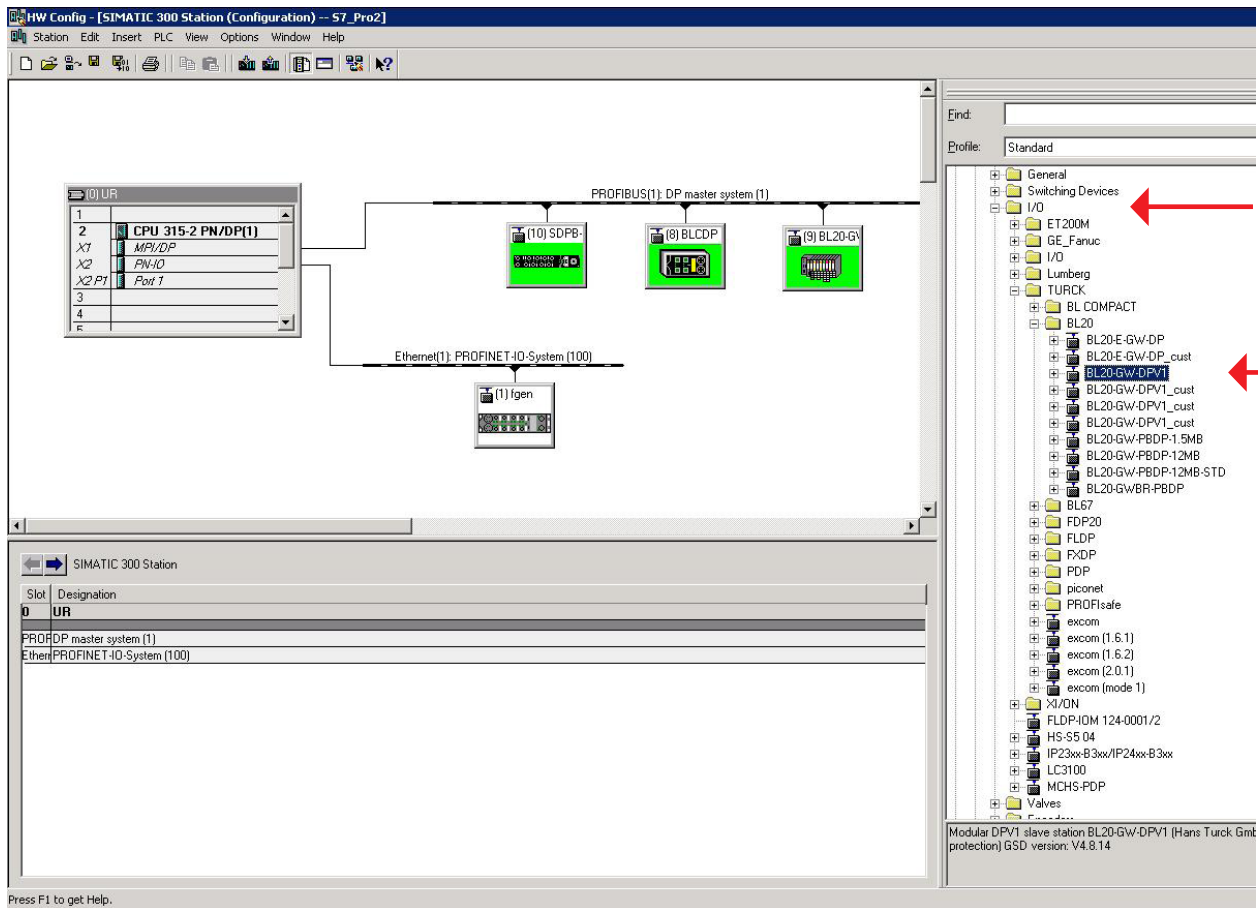

3. After selecting a device from the folder left click on the device (ie BL20-GW-DPV1) and drag it into configuration window onto the Profibus DP Master system.
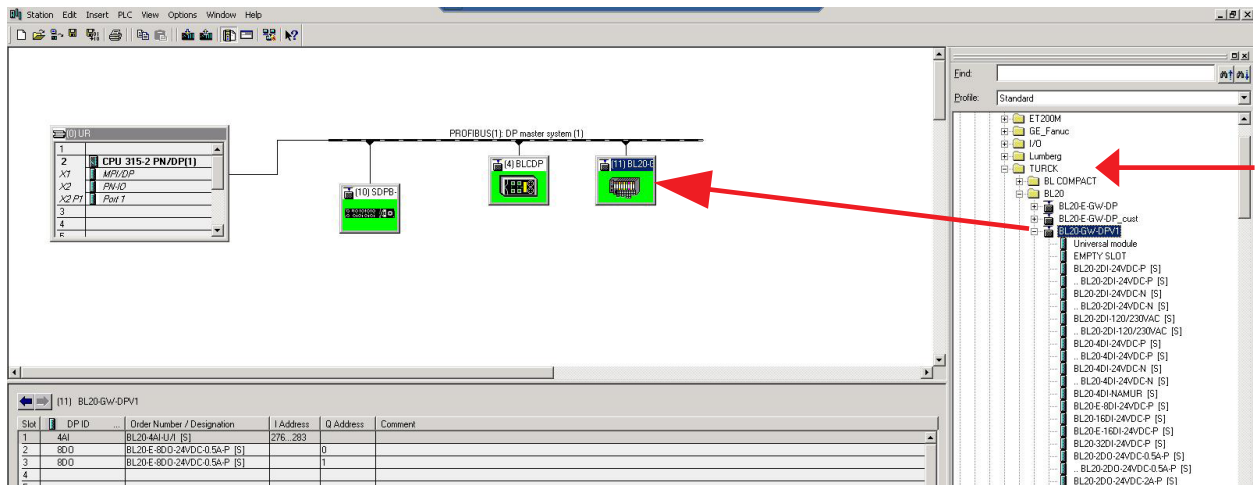
4. Once the device is on the Profibus network, double click on the BL20 to display the properties where the Profibus Node address and Parameters can be modified.
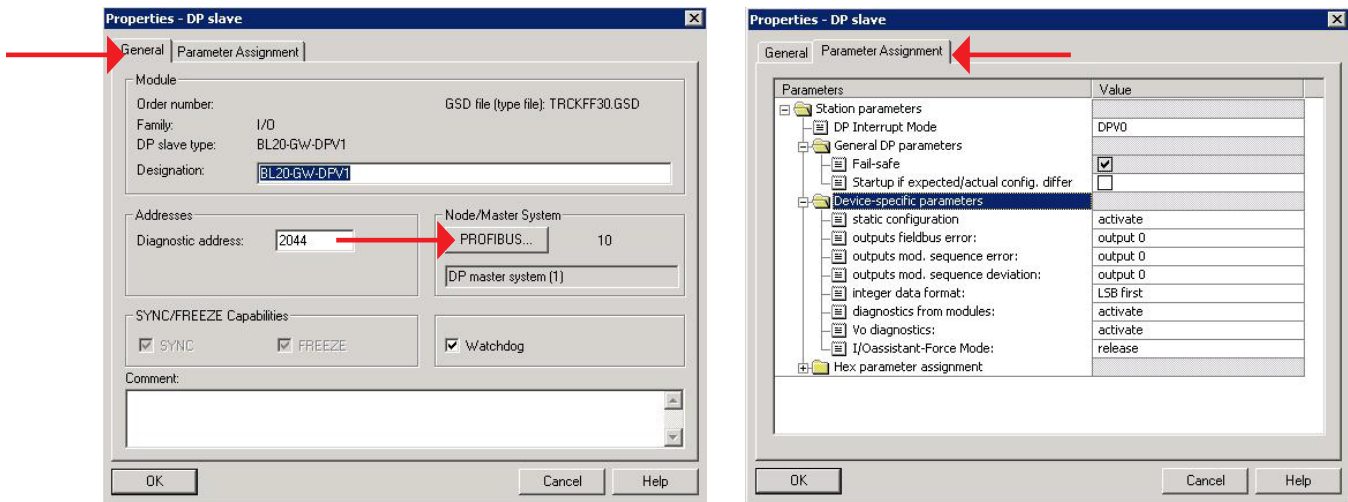

5. After adding the device to the network, the I/O associated device will be added to the system. Left click on the I/O slices and drag them into the I/O configuration window with the Slots / DP ID / Order Number / I addresses / Q addresses. Note: the I/Q addresses are automatically assigned but can be changed from the Parameters on each slice.
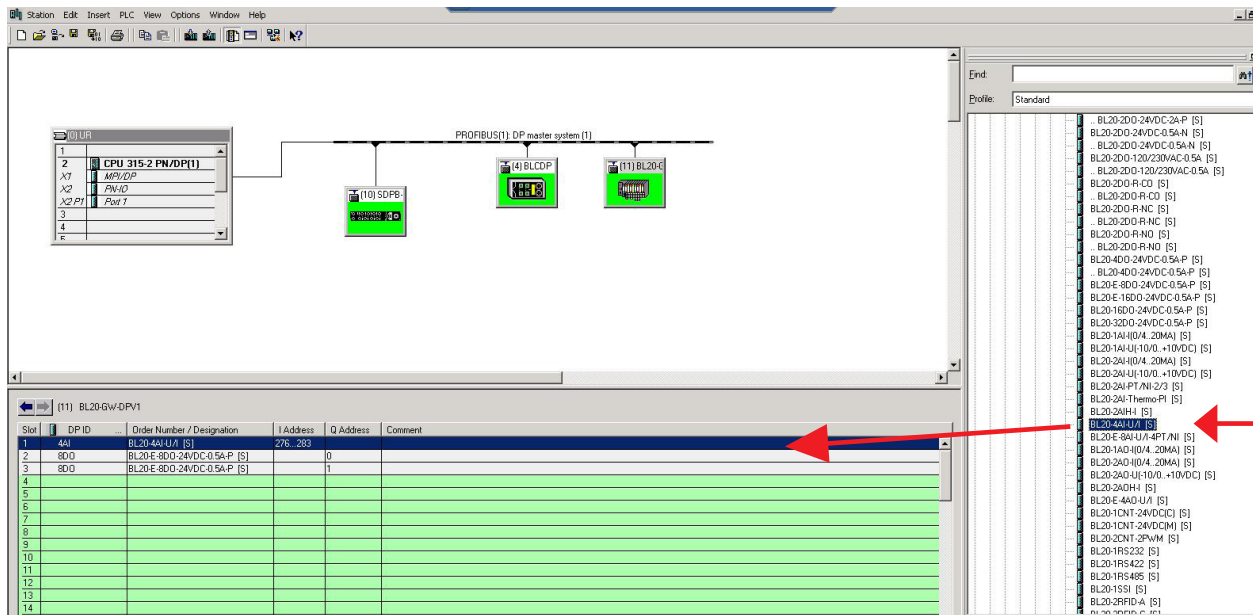
6. Left click on the individual slice to bring up the properties window.
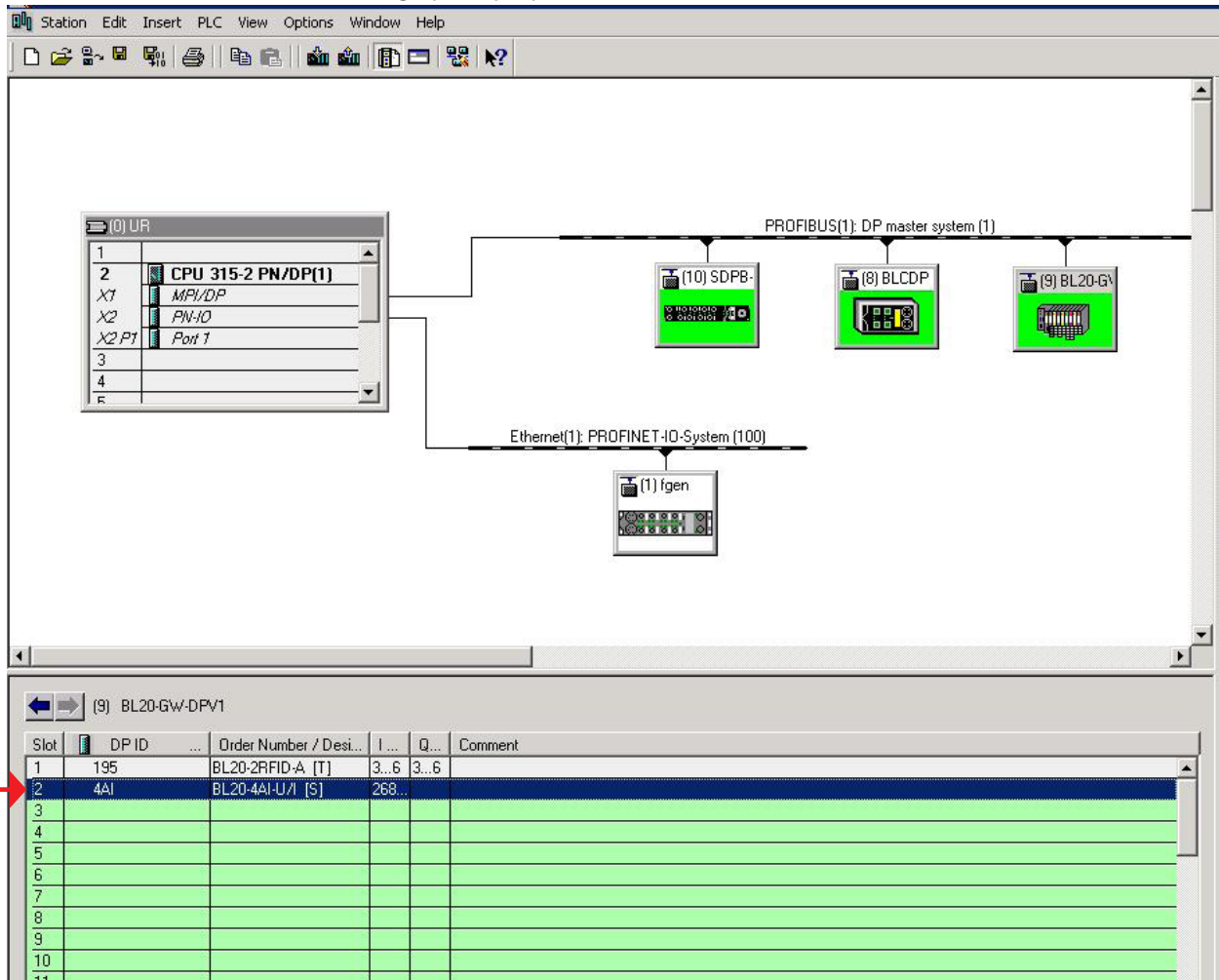
7. The first window is to assign the I/O addresses in the HW Config. The PLC will check to verify the length and make sure the length of Input / Output data does not overlap with other cards
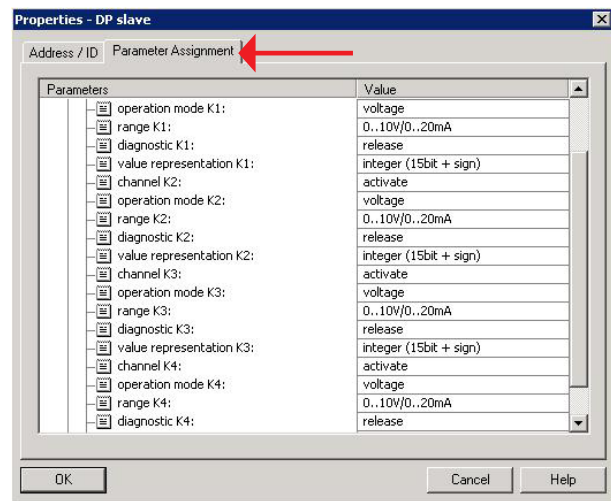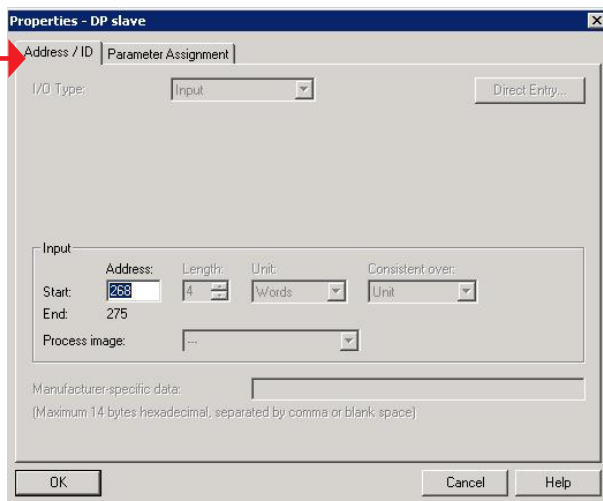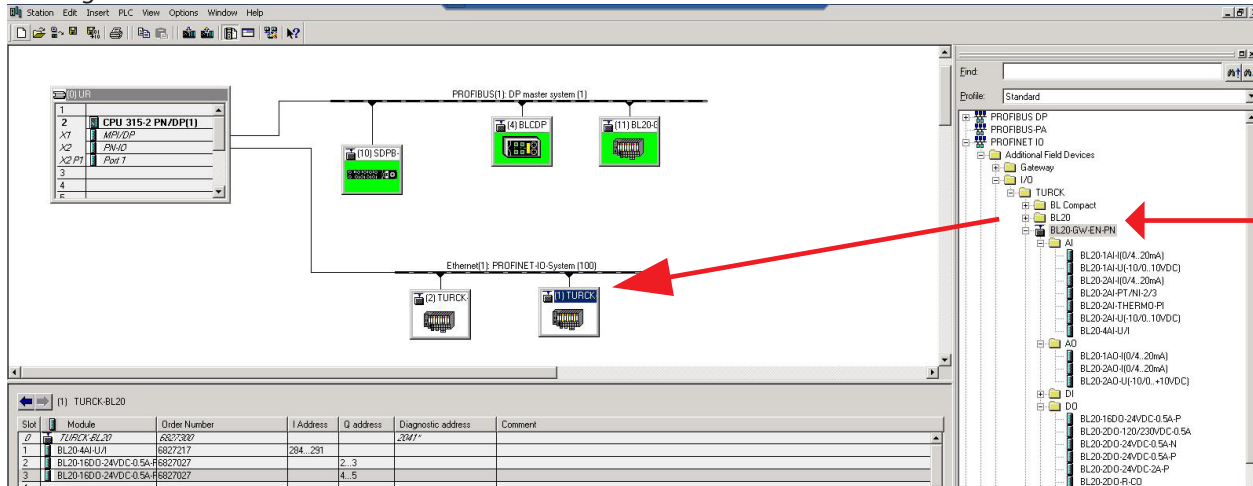
Adding a Profinet Device

1. To add a Profinet device, open the HW Config. On the right side of the HW Config window the Profibus, Profinet, and Simatic 300/400 station GSD files are stored in a Library.

   To add a Turck Profinet device, Select from the folder tree in the library –
   Profinet IO -> Additional Field Devices -> I/O -> Turck. This will show all Turck Profinet devices that have been added to the library.

2. After selecting a device from the folder left click on the device (ie BL20-GW-EN-PN) and drag it onto the Profinet Network in the configuration window.


3. Once the device is on the Profinet network, double click on the BL20-GW-EN-PN to display the properties where the ProfiNet Device name and number can be modified. The Device Name must match the name that is assigned to the device. It is case sensitive. There is also the area to modify the IP Address.
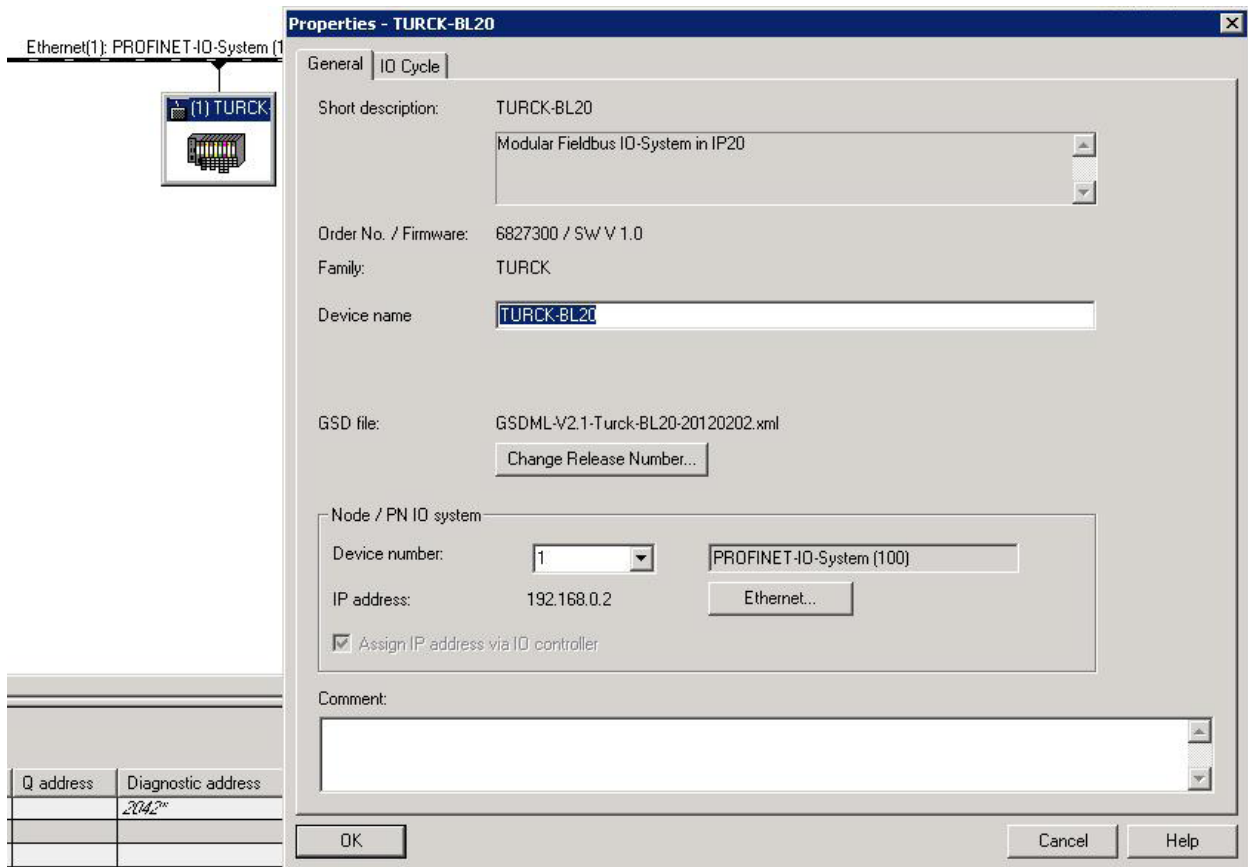
4. The Parameters of the BL20 gateway are located under Slot 0. To modify the Parameters, double click on the gateway and click the Paramters tab. These are specific to the gateway.
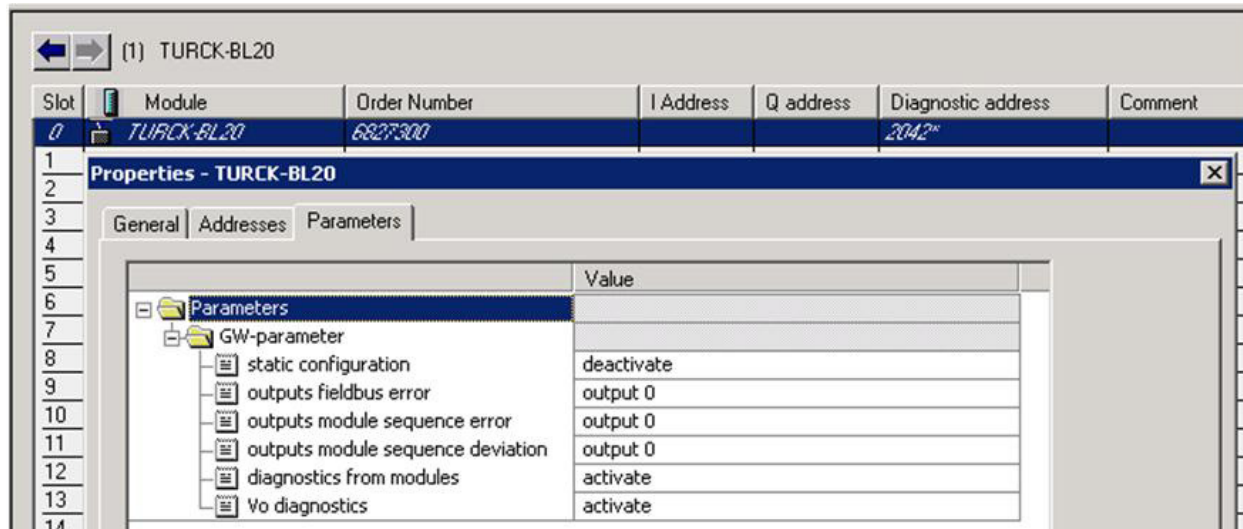
5. After adding the device to the network, the I/O associated device will be added to the system. Left click on the I/O slices and drag them into the lower window with the Slots / DP ID / Order Number / I addresses / Q addresses. Note: the I/Q addresses are automatically assigned but can be changed from the Parameters on each slice.
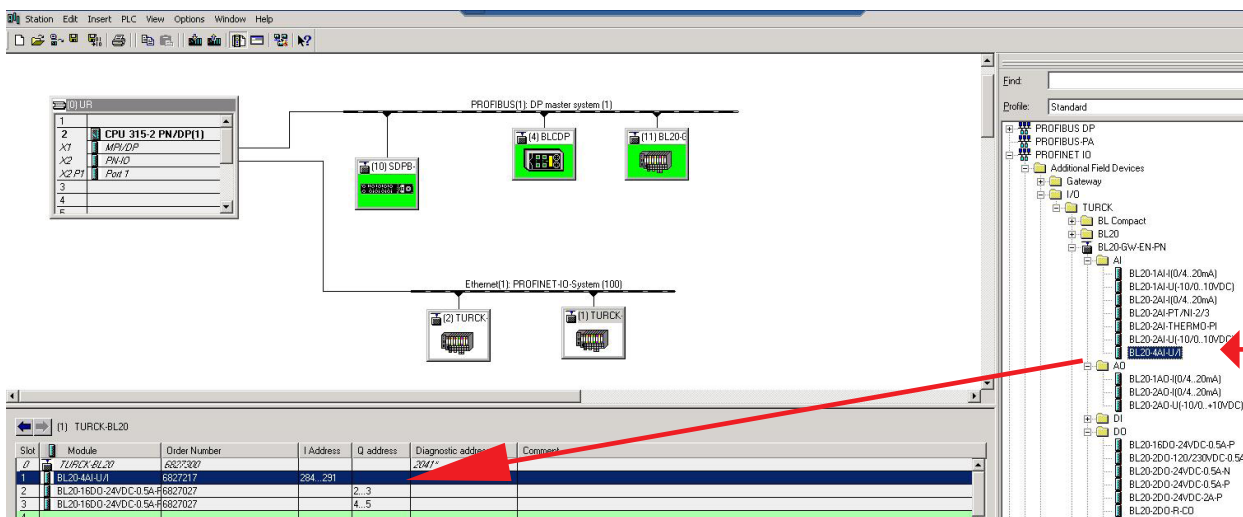
6. Double click on the individual slice to bring up the properties window. The I/O address is available for changing in the second tab and the Parameter Assignments are on the third tab.

TURCK PROFIBUS / PROFINET MANUALS

Profibus

BL67-PG-DP

http://www.turck-usa.com/illustrations/M6827240%20(sheet_2).pdf

BL67-GW-DPV1

http://www.turck-usa.com/illustrations/M6827232%20(sheet_2).pdf

BL20-GW-DPV1

http://www.turck-usa.com/illustrations/M6827234%20(sheet_2).pdf

BL20-E-GW-DP

http://www.turck-usa.com/illustrations/M6827250%20(sheet_2).pdf

Profinet

BL67-GW-EN

http://www.turck-usa.com/illustrations/M6827228%20(sheet_2).pdf

BL20-GW-EN

http://www.turck-usa.com/illustrations/M6827300%20(sheet_2).pdf

BL20-E-GW-EN

http://www.turck-usa.com/illustrations/M6827329%20(sheet_2).pdf

FXEN*

http://www.turck-usa.com/illustrations/D301136_FXEN_PROFINET_GB_0508.pdf